Information Acquisition and Excessive Risk-Taking: Impact of Subdued Market Risk and Low Interest Rates

Volha Audzei

CNB and CERGE-EI

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Motivation

- Current debate among policy makers:

Stein(2012), Bernanke (2012), Financial times (April 17, 2013)

- Empirical support:
  - potential causes of the crisis?

Maddaloni (2011), Ongena and Peydro (2011), Adrian et al. (2010), BIS report (2014)

Paper contribution

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- Two learning functions considered:
  - a linear
  - an entropy based

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- In low volatility environment there is more investment into risky asset
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  - as a result larger portfolio risk than in high volatility environment

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- 1st period is divided into 2 subperiods

Set Up continued

Bank's balance sheet:

Assets	Liabilities
Risk free, pays R_t^s	Endowment/Deposits
Risky, pays $R_{t+1}^r \sim N\left(\mu, \sigma_t^2\right)$	

Bank's expected next period portfolio return:

$$E_t \Pi_{t+1} = k_t^b \left(\hat{\mu}_t - R_t^s\right) + d_t R_t^s - b_t$$

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- and portfolio is chosen: $k^b_t = \frac{\hat{\mu}_t - R^s_t}{\rho \hat{\sigma}^2_t}$

Mean-Variance Utility

$$\max_{b_t, k_t^b} E_t \Pi_{t+1} - \frac{1}{\rho} Var\left(\Pi_{t+1}\right)$$

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$$\left(\sigma_t^2 - \hat{\sigma}_t^2\right) a \leq b_t$$

Mean-Variance Utility

Linear Constraint

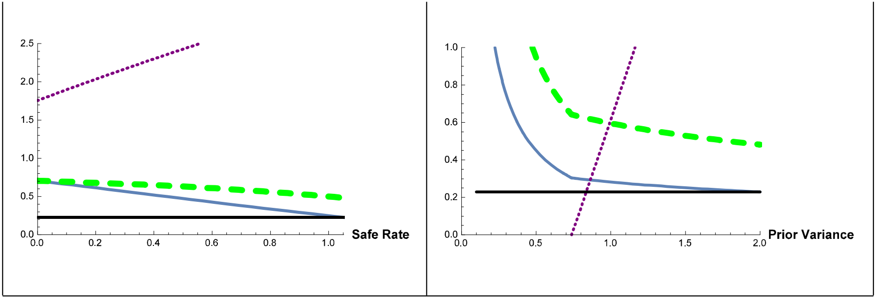
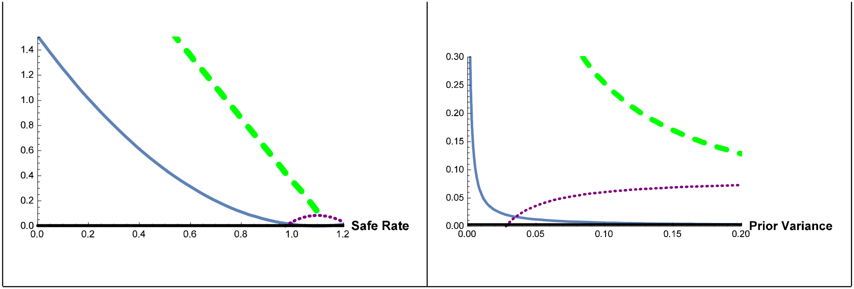


Figure: Mean-Variance Utility with Linear Learning

- - - risky asset holdings, k_t^b .... information budget, b_t

——(blue) portfolio variance ——(black) steady state portfolio variance

Mean-Variance Utility
Entropy



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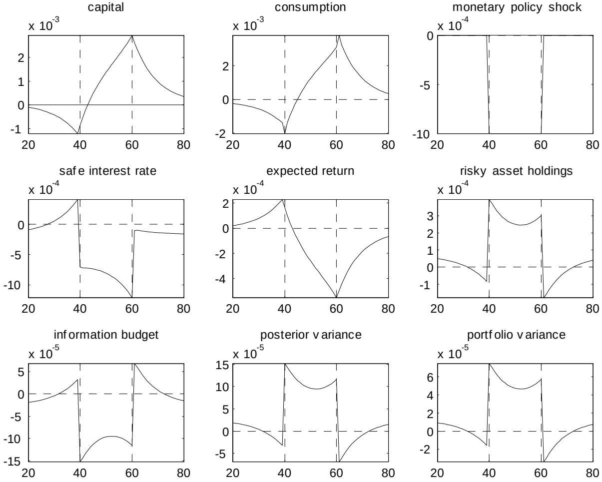

Figure: Response to a Change in Monetary Policy

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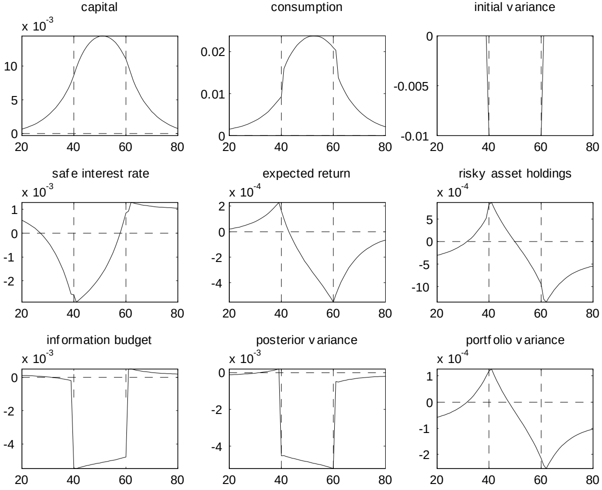

Figure: Response to a Change in Initial Variance

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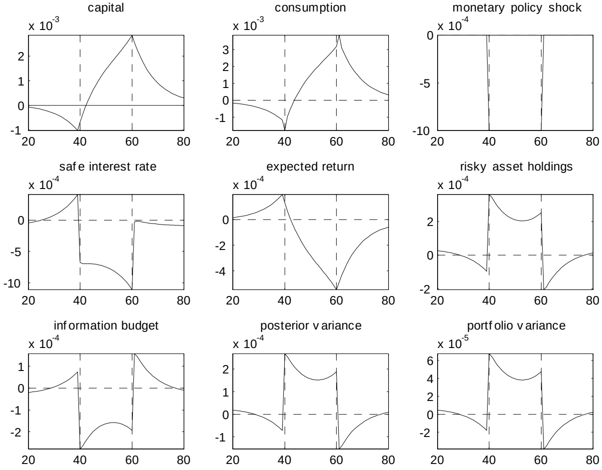

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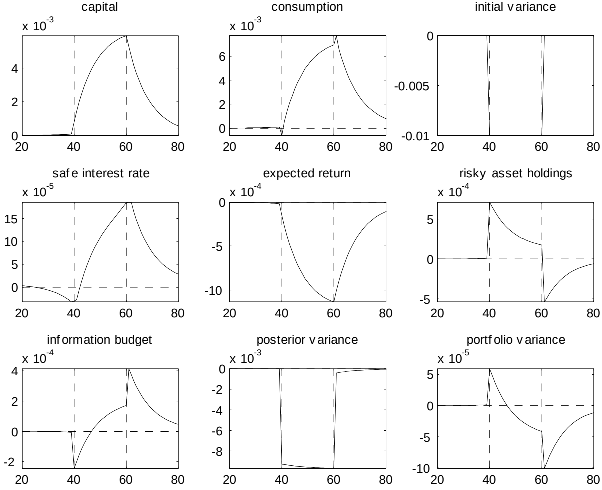

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Conclusion

- The model replicates excessive risk-taking in low interest rate and low volatility environment
- Low interest rates stimulate risk-taking:
  - search-for-yield
  - information acquisition
- Low volatility environment:
  - may stimulate risk-taking
  - amplifies effect of low interest rates